

5 School iPad Projects for Children with Autism

Craig Smith

csmith@autismspectrum.org.au

Aspect Hunter School Coordinator

 Apple Distinguished Educator

Introduction

As new classroom technology becomes available, it is a challenge for quality pedagogy to keep up with the rate at which we implement these new resources. In addition to Aspect's iPad research projects where we explore evidence-based outcomes associated with facilitating positive outcomes for children with autism, we also develop best practice programs to support quality classroom application of the Apple iPad. This document has been put together to share five classroom projects that utilise the iPad as a central tool for achieving some great student results, as have been implemented in Aspect classrooms.



Lesson 1. The 'Gamers' Project *(Movie Making)*



Lesson 2. Sounds of School *(Mapping and Music)*



Lesson 3. Let Me Show You *(Social Skills)*



Lesson 4. We Are Scientists *(Investigations and Reports)*



Lesson 5. I Know All About This *(Challenge Based Learning)*

The projects in this document proceed through a three-step workflow. First we **Introduce the Topic** and provide content to students that makes explicit what the projects is going to entail, as well as providing background to establish the ideas and procedures that will follow. When we **Build Understanding** we are presenting students with the opportunity to experiment with tools and to play with concepts that allow them to start forging their own understanding of the project. Teachers facilitate student engagement as they build up their understanding, leading to a stage where we can **Apply Learning** and support students to produce content that reflects their own unique conceptualisation of the project as originally projected. Through a process of reflection and generalisation this workflow can then commence again in a renewed cycle of learning.

When we utilise the **iPad** in this workflow, I generally ascribe three key **apps** to each stage of learning. Planning for iPad implementation in this manner allows for consistent, quality engagement with what the technology has to offer. We want to establish an environment where the iPad is not used in isolation for a particular numeracy or other session, but is rather a multifaceted tool that is used naturally across subjects to elevate learning to a position that, without the iPad, classroom practice would have been unable to attain.

Introduce the Topic



Build Understanding



Apply Learning



Project 1. The 'Gamers' Project.

Utilising student interests is a key part of creating a supportive, inspiring classroom environment for children with autism. For this project, we focused on the video games that students liked for the purpose of creating a movie. We wanted the students to be at the creative helm of every part of the movie production, from generating the initial ideas right through to the planning of location shots and soundtrack composition.



Year Range: Stage 2 – Stage 3

INTRODUCE THE TOPIC



App: iTunes

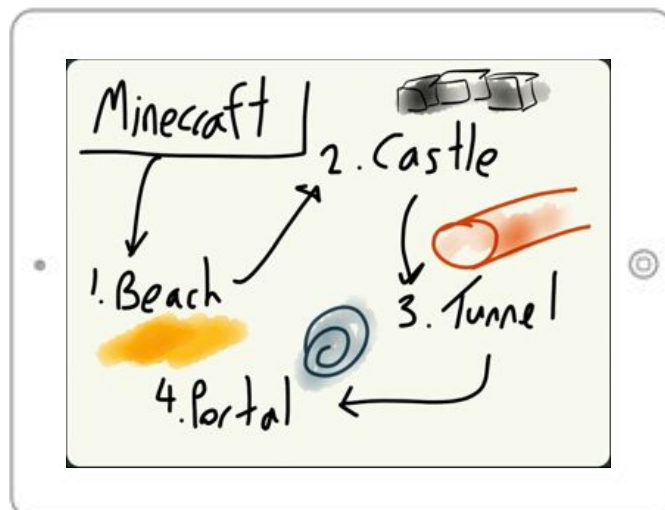


Introduce the idea of creating a movie by showing students parts of a film they might be familiar with. **iTunes** has movies to download straight to the iPad: we chose this Lego movie to we could start to discuss story basics: plot, character and related concepts.

The app **Paper** was used by students as they watched the movie to visually mind-map some of the concepts seen and discussed, and to start to consider some ideas they have for a movie the class can collaboratively create.



App: Paper





App: Sonic Comics

Comic book apps like **Sonic Comics** can be used to clearly demonstrate to students how storyboards are used to demonstrate plot movement and character dialogue. Comics of all kinds are available on the App Store, and it is easy to find appropriate comics that relate directly to student interests.

Once we have read some pages of the comic, we use **Sketchbook Ink** to annotate key ideas: how action proceeds, how characters are introduced, and so on.



App: Sketchbook Ink



BUILD UNDERSTANDING



App: Strip Designer

Strip Designer is a fantastic app for students to create their own simple storyboards. They can input images from games, from the Internet, from photos they have taken, or they can draw and add text. We want students to start to organise some of the ideas they have had so far, and to create some structure that can be presented to the class. Once we have a few structured ideas from the class, we can start to form an idea of how all our ideas can be combined to form a single, collaborative product.

Creating a theme around Video Games allowed us to use all the different game ideas that students liked to create a single story composed of these different ideas.

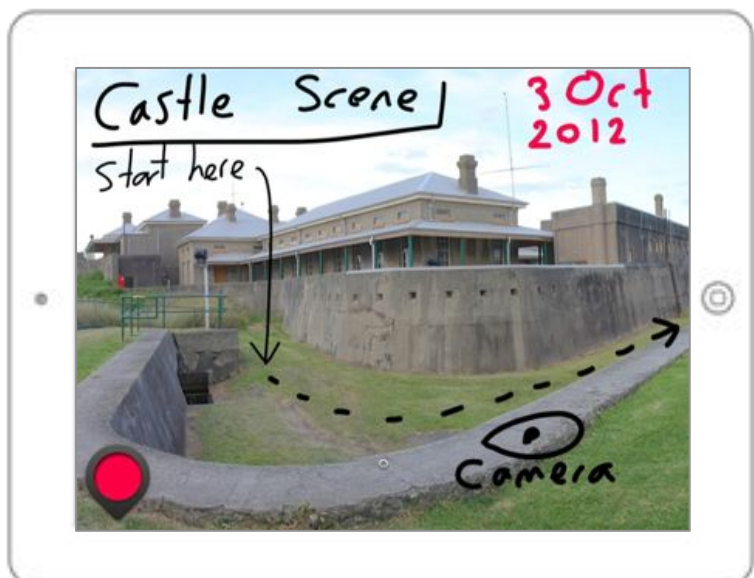
It is time now to take the iPad outside to begin scouting for locations that would suit our movie. We use the **Camera** app to take photos, and then use **Sketchbook Ink** to annotate the photos with ideas and directions that will later assist when it is time to begin filming our movie.



App: Sketchbook Ink



App: Camera

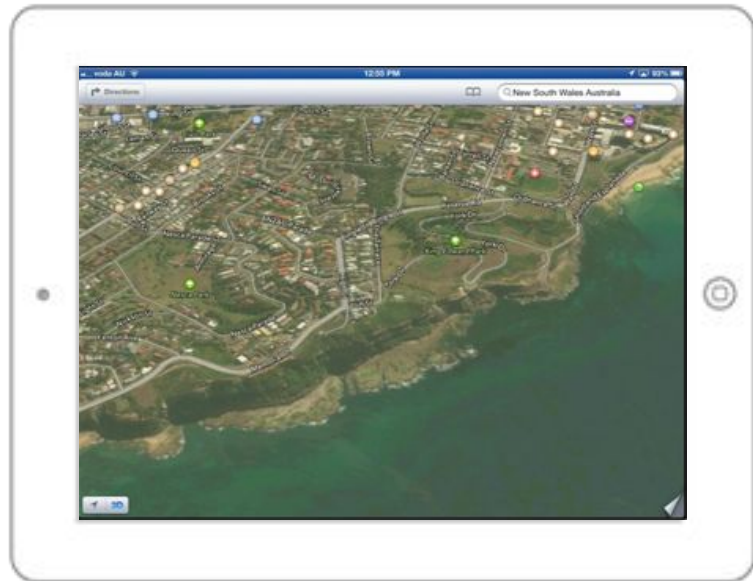




App: Maps



App: Keynote



We want our students to consider all the functional requirements of making this movie, including how to get to particular locations that they would like to film. If students want to film at the beach, for example, the app **Maps** will allow students to see the local area, to find the nearest beach, and then to calculate how long it would take for us to drive or catch the bus there. This leads to further functional considerations, such as allowing enough time during the school day to travel to the beach and to consider the cost of bus fares.

The app **Keynote** is a wonderful tool for creating a visual script of the movie to take out with the class when filming begins. All the ideas generated so far in apps like **Paper**, **Sketchbook Ink** and **Strip Designer** can be imported into **Keynote** to sequence a general plan for filming. It can help to note how many film sequences the class think they could get through in one day, and to then allocate days for filming so a well organised plan is in place.



APPLY LEARNING



App: iMovie



App: SoundCloud



App: SloPro



App: Tabletop iOS

At this stage of the project we commence filming our movie. We take our iPad into the field, reference our notes in **Keynote** and then use **iMovie** to begin filming scenes. **iMovie** is an easy yet very powerful tool for filming, looking back at what has been recorded, editing and sequencing takes, and cataloguing sections of film. Consider the use of an iPad camera tripod mount to hold it steady while filming as this can make a big difference to the quality of film when watching it back later. Apps like **SloPro** and many other special effects apps will allow students to experiment with slow motion and other cinematic effects that, once recorded, can then be imported straight into **iMovie** from the camera roll.



App: Phoster

Rather than using recorded music from other people as a soundtrack to the film, which can sometimes have copyright issues depending on where you want to show your finished movie, it is a great idea to use some of the powerful music composition apps in the App Store. An app like **Tabletop iOS** will allow students to create a great sounding electronic music soundtrack for the film that can be easily saved and imported into **iMovie** to be layered beneath the film. Students can showcase their compositions to family and friends by uploading them to a class **SoundCloud** account where they can be shared and e-mailed home to parents.

As a finishing touch, the app **Phoster** will allow students to create a full size A3 poster for their movie, to print out and display proudly for the red carpet premiere.

Watch the trailer for a movie we created at:
<http://vimeo.com/54360419>

Project 2. Sounds of School.

From a sensory perspective, sound can at times be a challenging input to problem solve. However, it can also be a source of fascination and mastery as students become engaged with music and the organisation of sound. In this project, we teach students to create a soundscape – a composition made by recording and organising environmental sounds – by first introducing them to musical concepts, then proceeding through sound experimentation and skills associated with mapping and understanding our local environment.

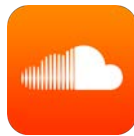
Year Range: Stage 1 – Stage 3



INTRODUCE THE TOPIC



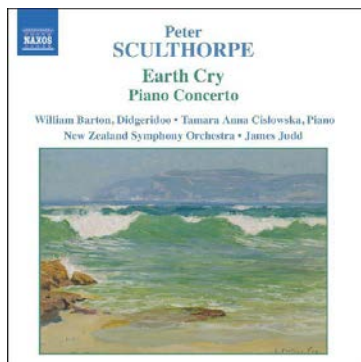
App: iTunes



App: SoundCloud

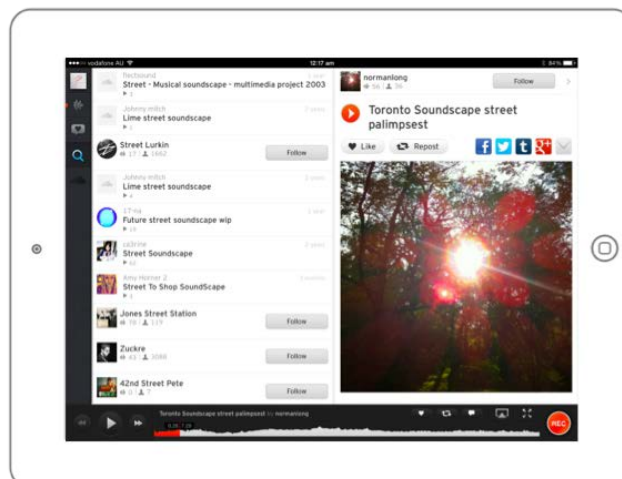


App: YouTube



Introduce the idea of creating a soundscape by playing students compositions that relate to this topic. **iTunes** has songs to download straight to the iPad: for older students, compositions like Peter Sculthorpe's '*Kakadu*' will introduce the idea of music emulating the environment.

Apps like **SoundCloud** and **YouTube** have many examples of soundscape compositions as well. Dave G Holbrook has many soundscapes, such as '*Music for Supermarket*' and '*Music for Huddersfield Bus Station*' available on these apps.

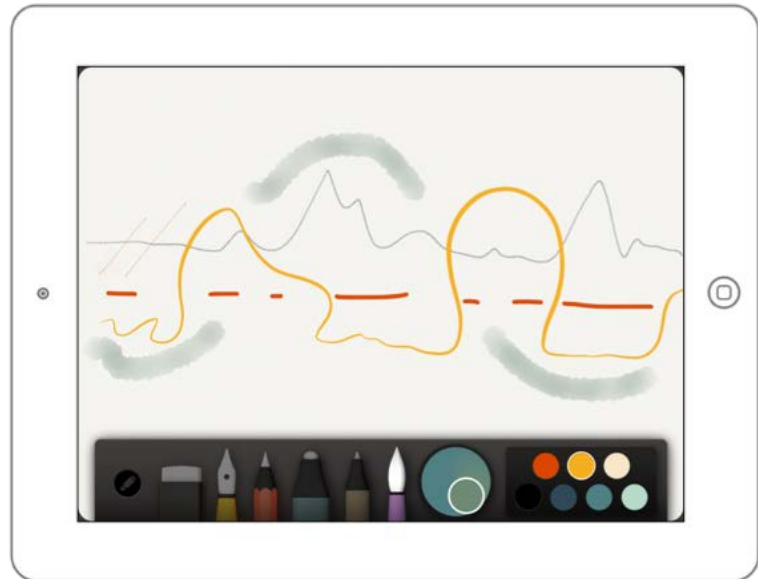




App: Paper



App: Explain Everything



While listening to the soundscapes, have students use **Paper** to draw what they are listening to, to visualise the sound patterns. The app **Explain Everything** can be used for students to record what they draw as they visualise the soundscape while the music is playing within the app. This is great for students to play back later and watch their drawing take shape as the music plays.



App: The Wagner Files

For older students in Stages 2 and 3 there are a range of fantastic music apps about composers lives that really explore the nature of composition in a motivating, multimedia fashion. **The Wagner Files** combines a graphic novel retelling of facets of Wagner's life, but also provides a great graphic notation visualisation of some of Wagner's operas as they play. This provides further insight into the process of organising and layering sounds for students as they approach their own composition.

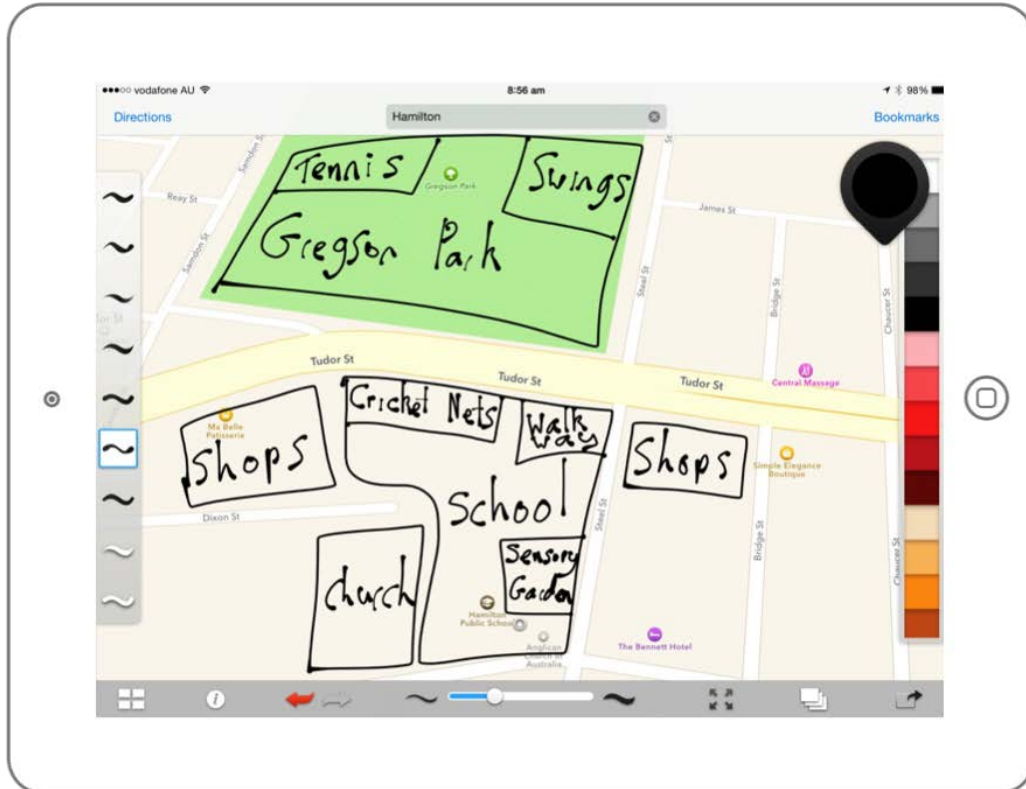




App: Maps



App: Sketchbook Ink



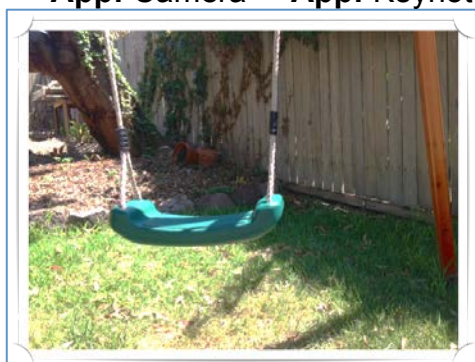
Soundscape are predicated on an understanding of the local environment where sounds are to be recorded. Using **Maps** to take a screenshot of the school environment and then importing it into **Sketchbook Ink** to annotate with local features is a great way to understand the different areas the school is made of. To build on this, students should walk around the school consider what sound sources they can find to record. Then, students use the **Camera** to take a photo of these sound sources and catalogue them alongside their annotated maps in slides on **Keynote**. These slides will be used later to play beneath the completed soundscape students will compose.



App: Camera



App: Keynote

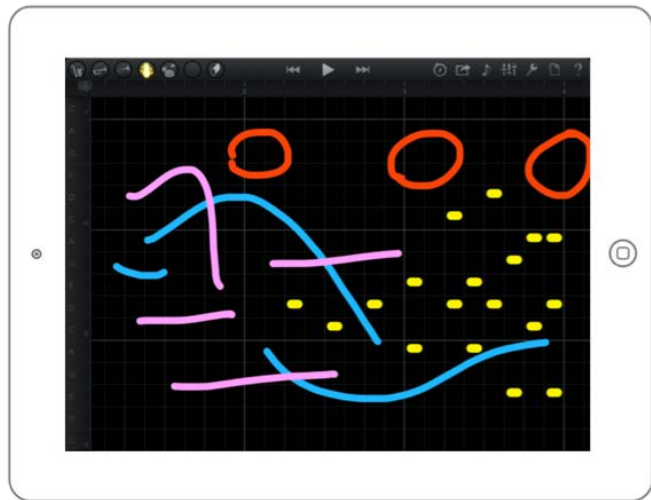


BUILD UNDERSTANDING



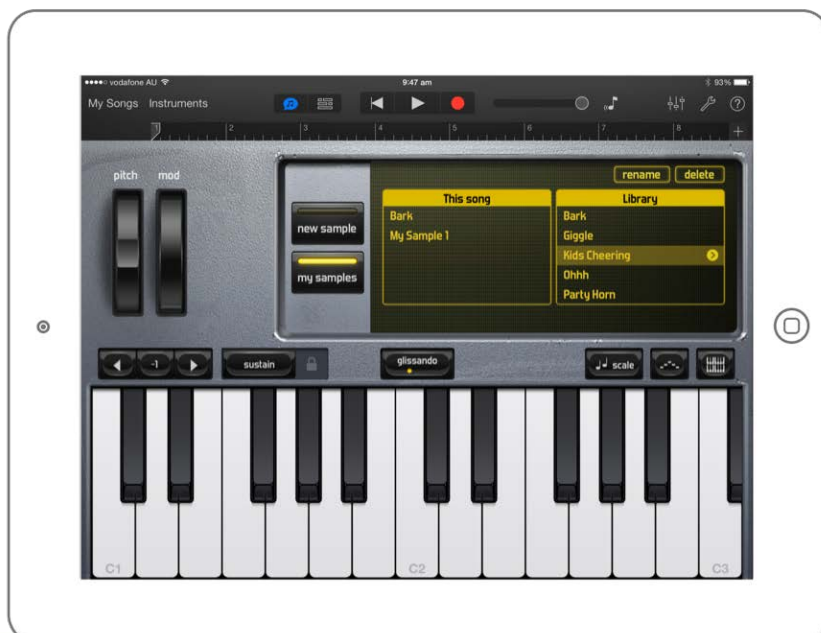
App: SoundBrush

A nice bridge into composition for some students can be achieved through **SoundBrush**. It takes the same graphic notation ideas students have been exploring as they listen to soundscapes, but in **SoundBrush** it will play back what students draw as a layered composition. A simple yet powerful composition tool.



App: GarageBand

Students should use **GarageBand** with the *Sampler* instrument to record the sound sources they earlier photographed. Swings, leaves on the playground, the sound of children playing, tennis balls bouncing – record snippets of sounds and build up a collection of at least 6 different sound sources in the *Sampler*.

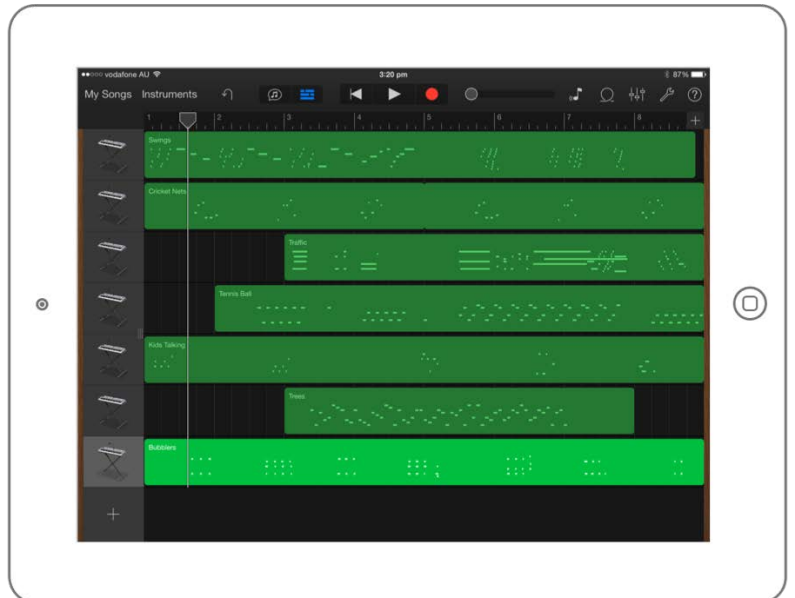


APPLY LEARNING



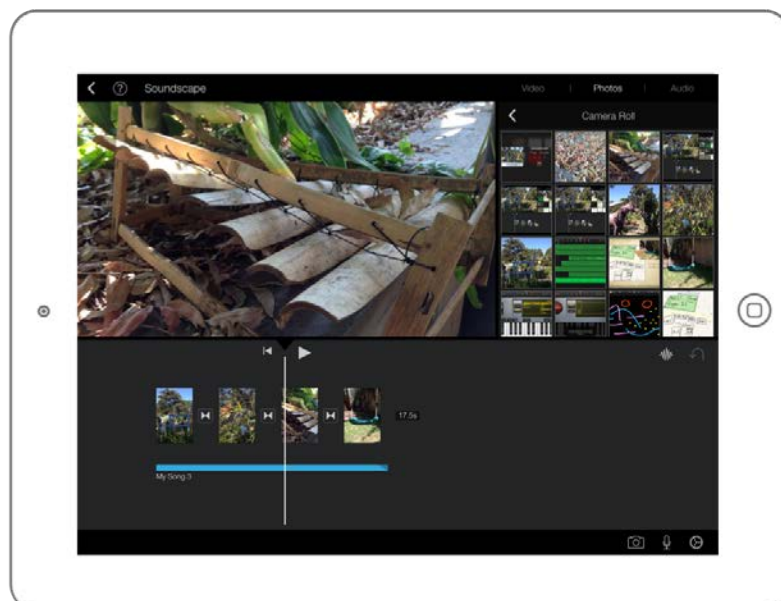
App: GarageBand

With all the sound sources recorded, you can now use **GarageBand** to play the sounds from the *Sampler* and build up a layered composition of sounds. Use the record function in **GarageBand** to compose one layer of sound, and then do the same for the following, until a full sounding composition has been created to reflect the sounds of the school yard. Students can add additional **GarageBand** instruments to the mix for further experimentation.



App: iMovie

After the composition is finished, it can be exported from **GarageBand** straight into **iMovie**. Then students can take screenshots of their **Keynote** slides, where they previously took photographs of the playground and annotated map images, to create a movie that shows the various sound sources and where they are located while their composition is playing. Include a mix of the **Keynote** slides and full size photographs of the playground for a nice visual sequence.



Project 3. Let Me Show You.

The purpose of this project is to model a variety of social skills to students using **iPad** apps that focus on play interactions. We then want to provide students the opportunity to experiment with the expression of these social skills. By the end of the project students will work with staff to produce a piece of media that records them demonstrating a targeted social skill with peers.



Year Range: Stage 1 – Stage 3

INTRODUCE THE TOPIC

The **app** company **Toca Boca** make a range of apps that explore play in nice, highly functional ways. Quite a number of the apps encourage cooperative play skills and extended dialogue interactions that provide a wonderful social modeling opportunity for children with autism.

On a project related to social skill development, I would introduce students to some of the apps in the Toca Boca range, teaming students up to play with these apps and to then observe the quality of interactions that result. From here, particular social needs will be apparent and will provide a social goal focus for the rest of the project.



App: Toca Hair Salon Me



App: Toca Store



App: Toca Tea Party



BUILD UNDERSTANDING



App: Puppet Pals



App: Toontastic

After students have engaged in play interactions with the Toca Boca apps, we want to support students to recreate some of the social interactions they were part of. For example, students may have played out a social scenario involving going to the hairdressers. Using apps like **Puppet Pals** and **Toontastic**, students can use cartoon characters, or photos of themselves, to create simple animated stories, narrated with their own voice. This is a great way to support students to experiment with social situations and to discuss different choices that impact on the scenario – *“how would you feel if this occurred, what would make this easier?”* Studies are also showing the importance of students creating proxy versions of themselves at times to navigate social situations in order to understand and reflect on many of the complex events occurring throughout.



App: iStopMotion

A number of students with autism I have worked with have enjoyed creating stop motion videos using clay, Lego, building blocks and other resources. The app **iStopMotion** is a great way for students to create stop motion videos that reflect the social interactions we are supporting them to understand.

APPLY LEARNING



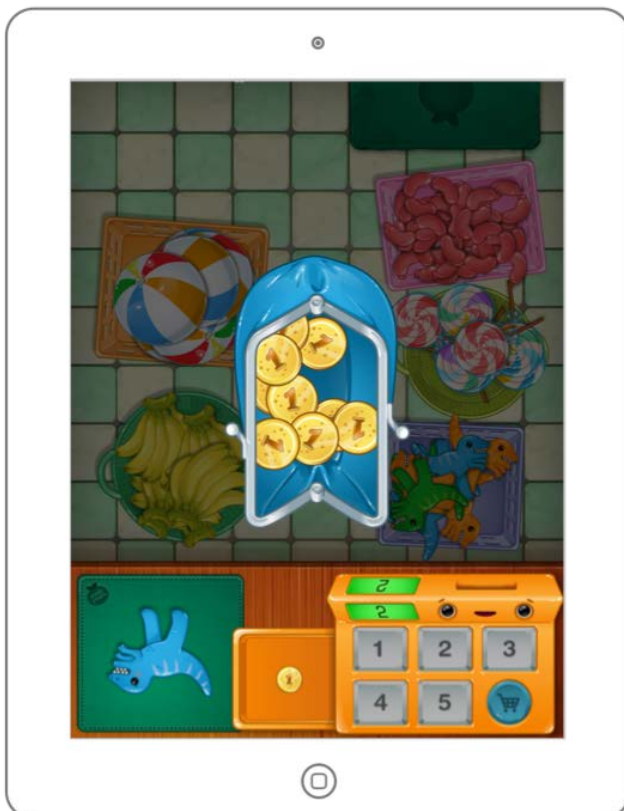
App: Camera



App: iMovie

Having modelled animated social scenarios, we now want students to demonstrate a key social skill through dramatising it with a peer and turning it into a video to share with others. The **Camera** app will allow students to test record takes of their dramatisation, and **iMovie** will provide students a clear way of filming and editing their video piece. Examples of social scenarios, as linked to previous elements of the project, could include going to the shops, having a tea party with a friend, meeting someone new, and so on.

Some schools have had success in cataloguing social drama videos that students have made and then using them to coach students who are going to be required to engage with a particular social situation. For example, if a student is going to start using the canteen at recess, a social video on going shopping would be a perfect model to use and provide pre-emptive support around. Below are some examples from Toca Store to highlight the aforementioned social play focus area.



Project 4. We Are Scientists.

The purpose of this project is to teach students the structure of scientific experiments so they may explore a range of scientific phenomena, conduct their own experiments and record them in a presentable manner. The manner in which we are going to attend to this is highly visual, with a number of high quality multisensory resources to lead into the scientific method.



Year Range: Stage 2 – Stage 3

INTRODUCE THE TOPIC

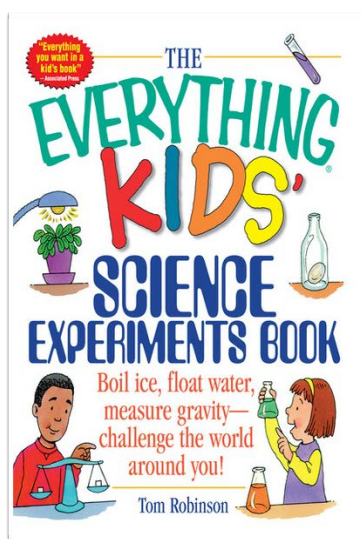


App: iBooks



App: iTunes

To introduce students to the scientific method, with regards to conducting experiments, a number of quality texts are available in the iBooks store that guide students through the process of understanding and conducting scientific experiments. 'The Everything Kids' Science Experiments Book' and 'Science Experiments' are two that I have used. As well, iTunes has some great video and podcast resources to guide students – videos such as 'Bill Nye the Science Guy' are great series to select relevant episodes from and show to the class.



BUILD UNDERSTANDING



App: Bobo Explores Light

For the next part of the project we want students to explore a number of scientific phenomena as related through quality science apps, so that students can find a focus area they would like to conduct a simple experiment on. I have selected three of my favourite science apps to use in classrooms here. **Bobo Explores Light** was one of the first science apps I used with my Stage 2 class and the design and functionality of the app was always a hit. As the title suggests, light is the focus of this app, and light is often a good experimentation focus as well as classroom experiments with light usually involve readily accessible resources.



App: Color Uncovered

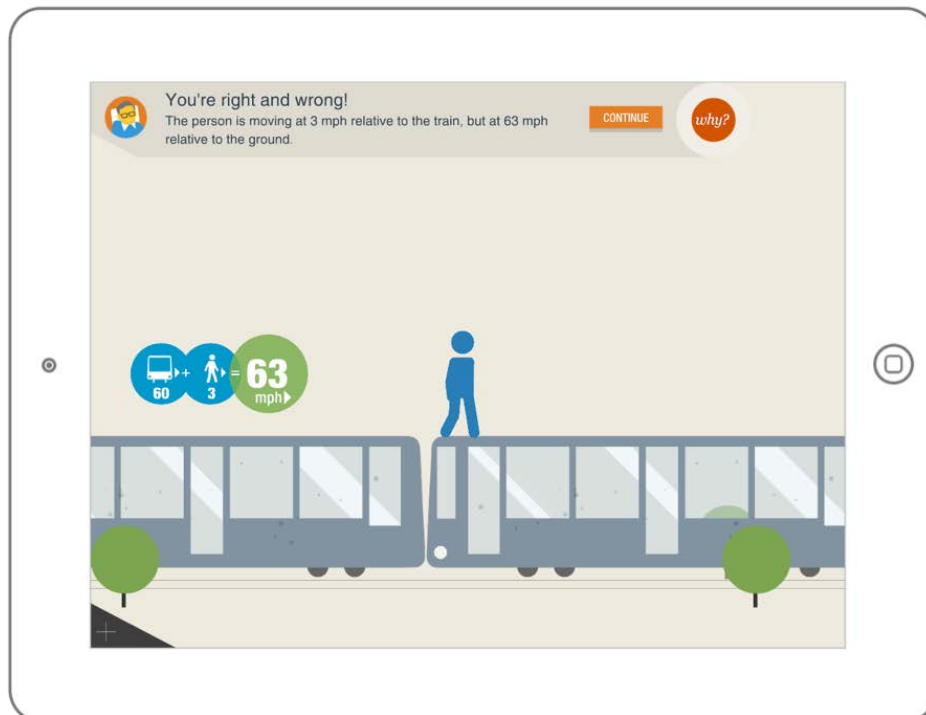
The app **Color Uncovered** is similarly strong in providing a number of avenues for further exploration with another readily accessible focus area – colour. We want to support students to explore these concepts through the apps and start to find some ideas or ready-made experiments that they can replicate.





App: Stephen Hawking's Snapshots of the Universe

This app, created as an interactive tool for students to explore some of the space and physics concepts associated with Stephen Hawking's areas of study, contains some clever visual portrayals of significant scientific concepts that students can experiment with. The app also contains video and text explanations for all the experiments within. For some of the experiments associated with space, teachers may be able to provide some guidance around how these experiments could be replicated simply in the school with other means.

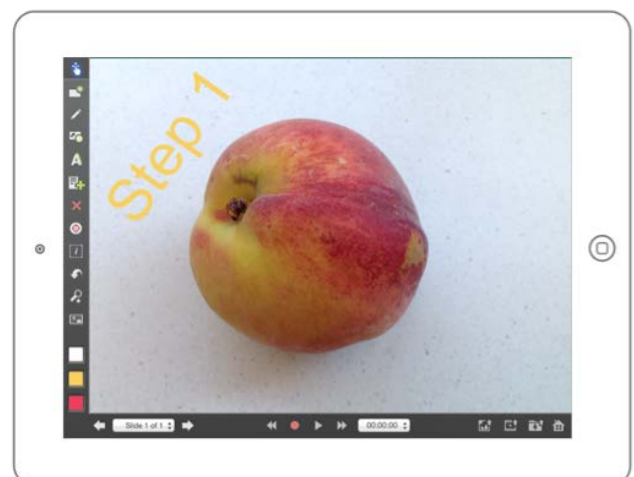


APPLY LEARNING



App: Explain Everything

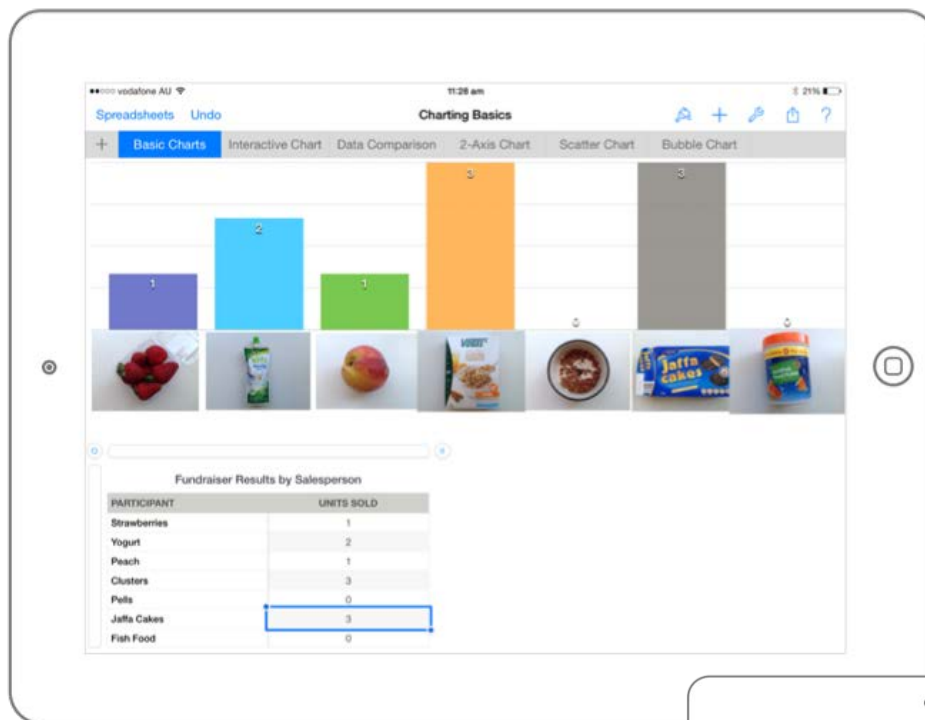
When students find an experiment they would like to create or replicate, the app **Explain Everything** will be a great tool for documenting the process and allowing students to narrate and annotate to further provide detail. It is great to watch the presentations created in Explain Everything later as a class.





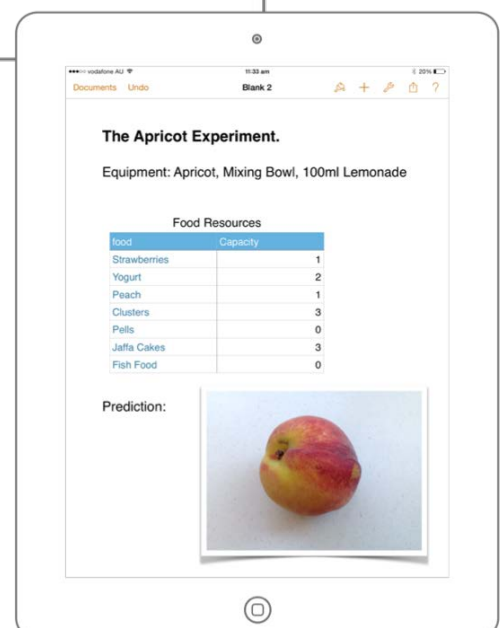
App: Numbers

After documenting the process of the experiment in Explain Everything, we want students to write a scientific report on what they have conducted. **Numbers** is a powerful app to teach students to use for the purpose of creating graphs and tables. This is particularly important for recording experiments – two simple exercises for teaching Numbers in this way could be to create different graphs that visually show the outcomes of a coin toss, and different ways to visualise food preference in the class. Graphs and tables created in Numbers can be easily copied into other apps later for further use.



App: Pages

When it comes time to write up the experiment, **Pages** is a useful word processor for students to document the key elements of their experiment. They can import photos taken for their **Explain Everything** presentation, and can import any charts and graphs from their **Numbers** presentation, ready to e-mail to other peers in the school to read and consider replicating in other experiential conditions.



Project 5. I Know All About This (Challenge Based Learning)

A focus for much of the content related to classroom curriculum is increasingly within the space of real-world, functional application of learning. For children with autism, it is valuable to consider this within the broad perspective of student individual education goals, particularly those that relate to generalised social functioning. In this project, we set a goal that students will be able to take something they are passionate about, such as a special interest, and teach things relating to this interest to another student. Note the verb teach - our students are often adept at talking about their special interests, but we want them to really think about how they are passing on information and evaluating this teaching process.



Year Range: Stage 2 – Stage 3

CHALLENGE BASED LEARNING

1. The Big Idea
2. The Essential Question
3. The Challenge
4. Guiding Questions and Activities
5. Guiding Resources
6. Solutions and Presentations

Challenge Based Learning (CBL) is a framework developed by **Apple** to support the development and implementation of problem solving activities that apply to real world events. This supports students and staff to consider the functional applications of classroom activities as they relate to daily social needs. Within an autism context, we are always considering the functional application of student goals and classroom pedagogy, and it with this in mind that we utilise this CBL project. For more information on CBL, go to: <http://www.apple.com/education/challenge-based-learning/>

INTRODUCE THE TOPIC



App: iTunes U

Introduce the idea of teaching elements of a special interest to students by brainstorming things that students in the class are interested in, and then use iTunes U to see what is available in relation to these interests. For example, as part of the 'K-12 Online' iTunes U course there is a podcast of Alexander Fryer talking to teachers about how to play Minecraft. Have students discuss what they think about the way Alexander teaches elements of his special interest.



App: iBooks Author



App: iBooks

In our classroom, I worked in collaboration with the class to create an iBook that would help students to understand the different elements of teaching something to somebody else. As I wanted to utilise the **Challenge Based Learning** framework, this was used to structure the content. We used iBooks Author (available on MacBook and desktop Mac computers) to compose our iBook. The fantastic part of creating your own textbooks in iBooks Author is how unique and differentiated the content can be. Students can use their own photos and related media to work alongside staff in developing a real-time resource that responds to the current needs of the classroom. The next section of this project will show you sample pages from the iBook we created to give an overview of how we used it as a resource to guide the project.



BUILD UNDERSTANDING

1. THE BIG IDEA

The Big Idea.

What can I teach to somebody else?



It is not only teachers working in schools who can teach people - every person can teach something to somebody else.

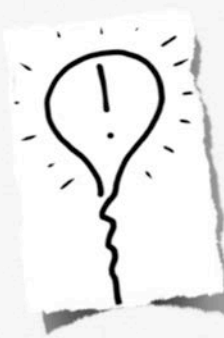
By the end of this challenge, every student in this class will have taught something they know about to somebody else.

'The Big Idea' is a broad topic that helps capture the general area and notion of importance related to the project focus. For us, we defined our big idea as a central question - 'What can I teach to somebody else?'

Chapter 1

The Big Idea

What Can I Teach To Somebody Else?



Today



Everybody has an interest in something. When you are interested in something, you start to learn a lot about it - if you are interested in playing computer games, you start to learn a lot about those games; if you are interested in animals, you start to learn a lot about different animals.

The 'Big Idea' that we are going to challenge ourselves with is this - everybody in our class is going to choose something they are interested in, and then they are going to teach somebody else about their interest. You might teach somebody who you are friends with, or you might teach somebody that you don't know very well. Once you have taught them, you are going to test them on what they have learned about your topic. That way you will know how successful you have been in sharing your knowledge.

3

2. QUESTIONS

Questions



In this lesson we are going to have a chance to think about all the questions we have about this challenge.


Every question is a good question. The more questions that we ask, the more that we will learn.

For **'Questions'** we consider all the things we want to find out before we start the project. *"What am I interested in?" "What do I know a lot about?" "What do I know how to do really well?" "What is something I could teach to somebody else?" "How do people teach?" "How do I know somebody is learning?" "What would I like somebody to teach to me?" "How do I like to be taught?" "How do I best learn?"*

Chapter 2

Questions

What Can I Teach To Somebody Else?



Today
What questions do you have about this challenge?

Here are some questions to get you started -

- What am I interested in?
- What do I know a lot about?
- What do I know how to do really well?
- What is something could I teach to somebody else?
- How do people teach?
- How do I know that somebody is learning?
- What would I like somebody to teach me?

What other questions could you ask?

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3. THE CHALLENGE

The Challenge



We have asked ourselves lots of questions about this challenge - now it is time to make a plan.


In this lesson we are going to say exactly what we plan to do so we can solve this challenge.

For **'The Challenge'** we take our questions, consider the answers we generated, and from this we establish exactly what we plan to do so we can solve our challenge. This is where students can decide on and refine what they are going to teach to somebody else. This is a good opportunity for students to start to note down some of the key content or transferrable skills that would be good to focus on in relation to their topic.

Chapter 3

The Challenge

What Can I Teach To Somebody Else?



Today

You are going to decide on what you will teach somebody. Is it going to be a skill that you have, like being able to kick a football or draw a map, or is it going to be something you know, like about a video game or a style of music?

You are going to list all the things that you could teach to somebody else. Think about things you like to do. Think about things that others say you are good at.

Here are some examples to get you started:

- How to play Minecraft
- Different carnivore animals
- Bushranger history
- Styles of popular music
- How to make paper airplanes

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4. GUIDING ACTIVITIES

Guiding Activities

4



Now you know what you are going to teach to somebody, but how will you teach it?



Today we are going to practice different ways to teach something to somebody else.

When we plan the '**Guiding Activities**' that will help our students develop the skills they require to teach their special interest to someone else, we need to consider a scaffold of explicit expectations: you need to teach someone within a 5 minute time limit, so what can you teach in that time? Develop cue cards, record yourself with the iPad **camera**. Get student input as to what guiding activities they think would be useful when you develop this section of the **iBook**. Provide visual examples of the guiding activities and learning strategies.

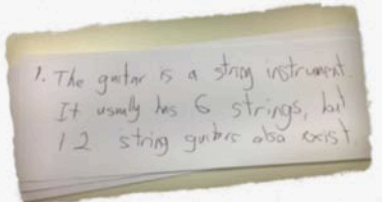

tant to Australian history, 3) How he started as a bush ranger, and so on.

Now that we have our list of facts about our topic that we want to teach, you are going to write each of your facts on a separate 'cue card' that your teacher will provide you. Once your facts are on your cue cards, you are going to find somewhere quiet to sit and read through the cards one by one, talking as much as you can about each of them.

Try and time yourself with a watch from when you first start talking: remember, we are aiming for around **5 minutes** (tip: use the **Clock** app on your iPad to set the **timer** to 5 minutes).



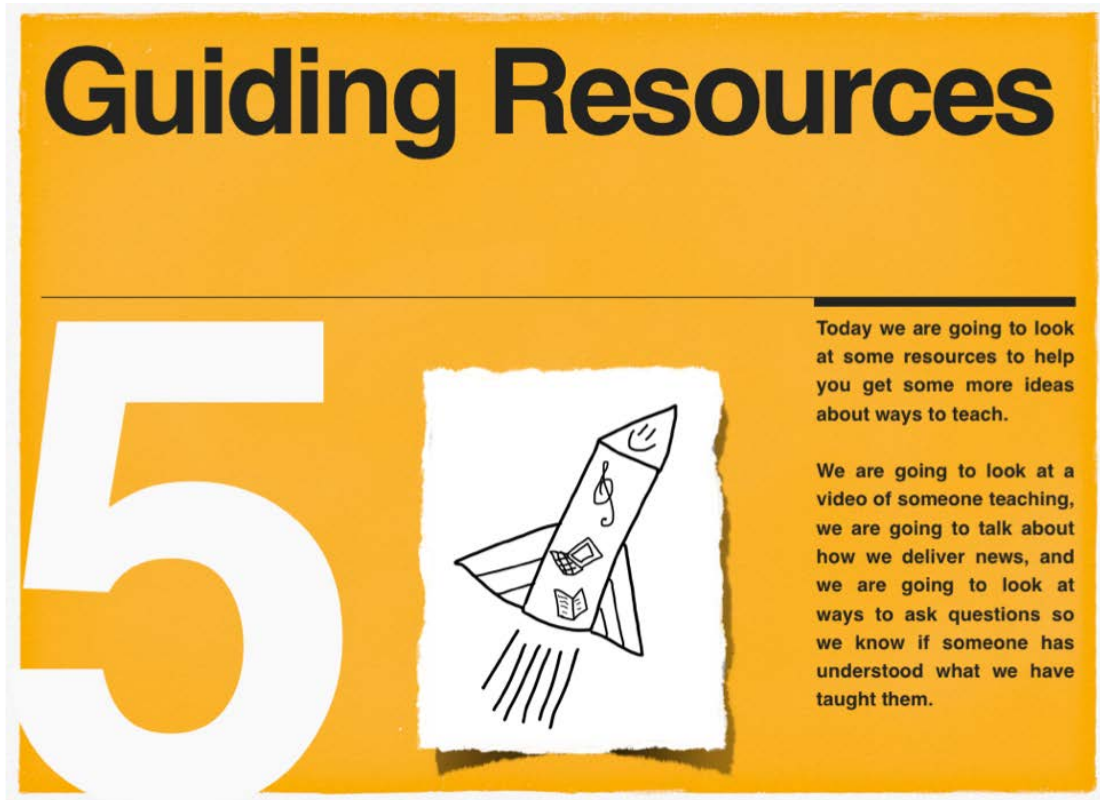
Keep practicing with your cue cards. If you feel like it, ask a friend who has finished practicing to sit and listen to you read your facts. Then you can listen to your friend read (tip: you can use the **Camera** app on your iPad to film yourself reading your cue cards if you would like to do more practice alone before sharing with a friend).



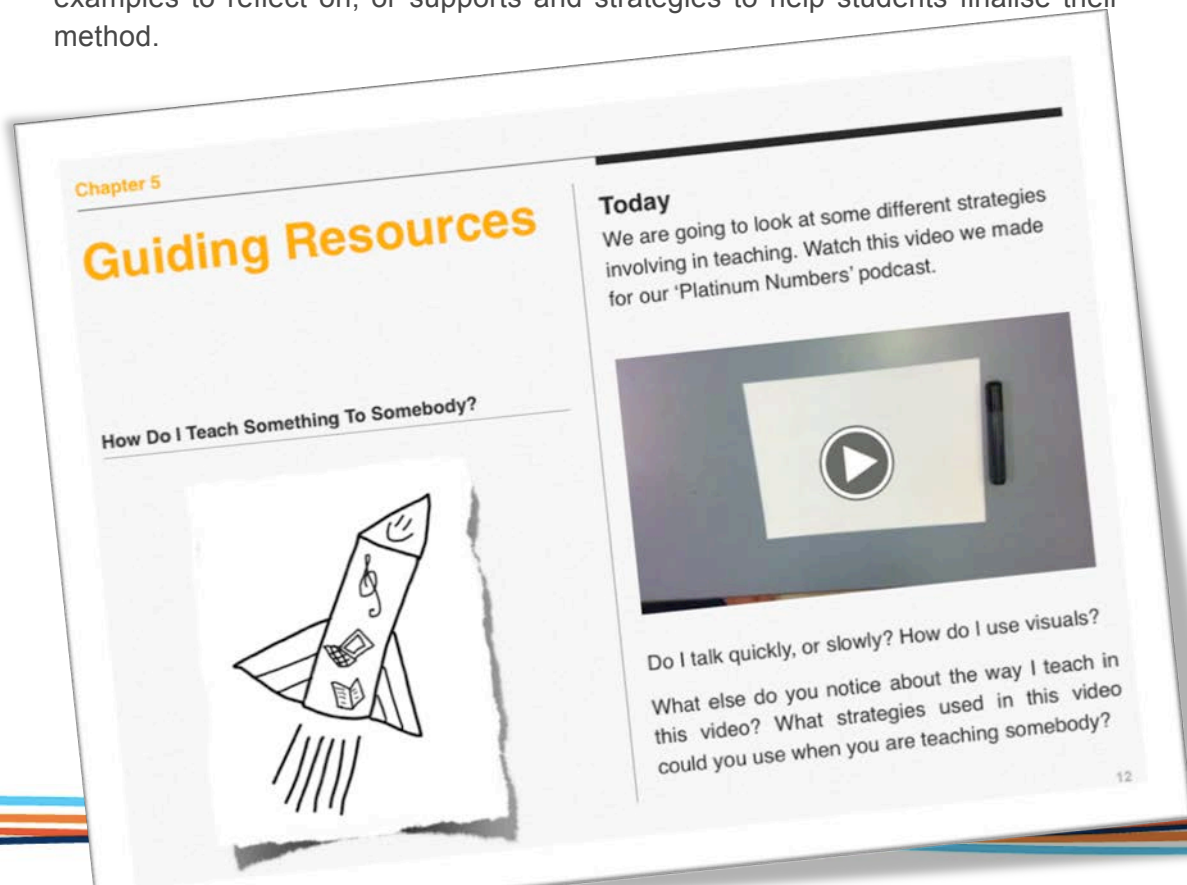
1. The guitar is a string instrument. It usually has 6 strings, but 12 string guitars also exist.

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5. GUIDING RESOURCES




This is where the interactive quality of **iBooks** can really shine. In our iBook, we inserted video of a podcast we created for teaching numeracy concepts, examples of cue cards and question prompts, and interactive multiple-choice questions for students to use in order to develop a practiced system of teaching ideas related to their special interest. The resources can include further teaching examples to reflect on, or supports and strategies to help students finalise their method.



6. IMPLEMENTATION AND REFLECTION

Implementation and Reflection

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You have done it! You have taught something that you know about to somebody else. You have completed the challenge we set for ourselves - now we are going to reflect on how we did so we can adjust and improve the way we will teach somebody in the future.

After students find a peer to teach their special interest to for five minutes, it is time to reflect on how things went: what went well, what could be improved? Provide some prompts and ideas for reflection, and work with students to produce a **Keynote** or similar presentation that summarises how the process of teaching a peer went, how effective they felt they were, and what they learned from the experience. This is a good opportunity to engage in some metacognitive discussions regarding how it feels to share personal interests with others, how they feel when they are taught something they don't know anything about, and if this has triggered any thoughts regarding how they best learn in the classroom.

Chapter 6

Implementation and Reflection

I Have Taught Something To Somebody!



Today

Well done! You have had a go at teaching something to somebody - you're a champion!

How did it go? What did you feel you did really well? What did you feel you could improve on next time? It takes every school teacher a long time to start to feel confident teaching things to others - practice makes perfect!

Today we are going to make a Keynote presentation that shows:

- the facts about the topic you taught
- the things you feel you did well
- the things you feel you could improve on
- what you felt when you were teaching

And if you have a video of yourself teaching, we could watch it with the whole class (if you would like!) :)

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APPLY LEARNING

As one of the key elements underpinning the foundations of **Challenge Based Learning** is the real-world element, after the process of supporting students to teach their special interest to another peer is complete it is worth considering other applications for this attained skill. In our setting, we established a community based social club with a focus on video games for local children with autism to attend. Students brought their own **iPad** loaded with games, and we supported collaborative play amongst peers. One of the benefits of having engaged with the Challenge Based Learning activity was that students involved in this also attended some sessions at the social club and were able to use their newly acquired teaching strategies to mentor and support other peers at the club who were not as familiar with particular games. This was a fantastic real-world outcome.



App: Sonic the Hedgehog

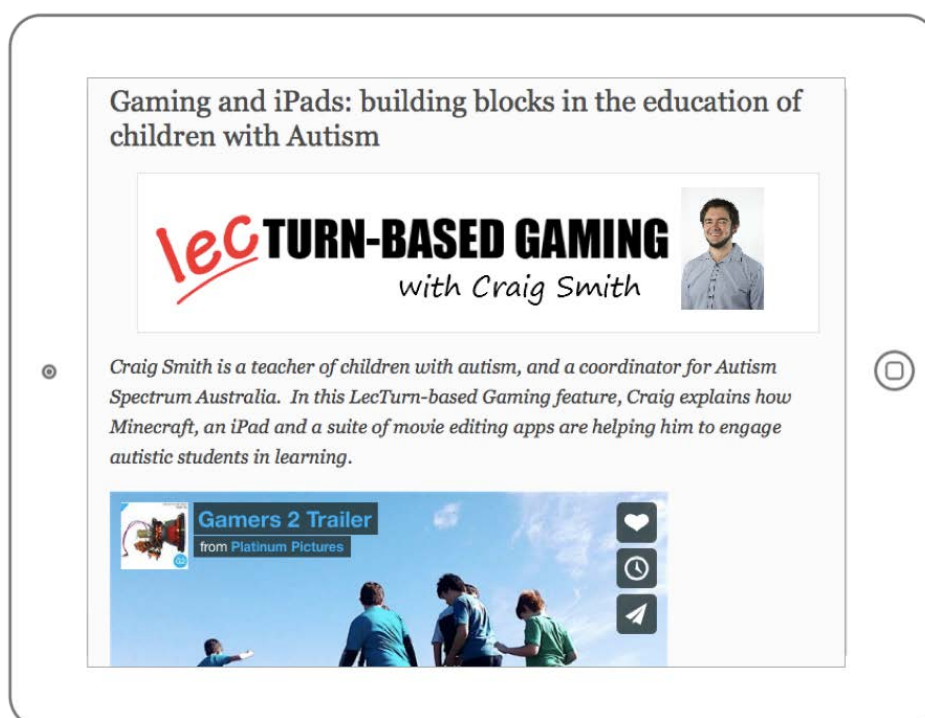


App: Minecraft

To read more about the video game social club, an article published by Engage Newcastle can be read here: <http://www.newcastle.edu.au/engage/-/social-clubs-get-kids-with-autism-back-in-the-game>

For more information regarding the use of video games in autism education, I contributed an article to website Gamer Thumb here:

<http://gamerthumb.com/2013/11/27/minecraft-on-ipad-a-building-block-in-the-education-of-children-with-autism/>





csmith@autismspectrum.org.au



[@wrenasmir](https://twitter.com/wrenasmir)

